aurora^{Duet} – Application note No.1.

E1 and Primary Rate Links

Testing physical layer and link quality.

1. Determining system link quality – *Layer 1 Statistics on the aurora^{Duet}*

When a call fails or call set-up problems exist it is extremely useful to have an instant readout of the physical layer quality indicators to help isolate customer equipment problems. The aurora^{Duet} offers 'hotkey' access to view instantly the error counts and messages to G.703 and G.704 specifications. This function is available in both monitor and simulation test modes.

Table 1. G.703 / G.704 statistics and error counts on aurora^{Duet}

Identifier	Description
NOS	No incoming signal has been detected
AIS	Alarm Indication Signal has been received
LOS	Loss Of frame Synchronisation
RAI	Remote Alarm Indication has been received
CRC	Cyclic Redundancy Check 4 (CRC4) errors have been detected.
E	E-bit errors from the far end.
SLIPS	Frame timeslot slips
FAS ERRORS	Displays errors in the FAS word
NFAS ERRORS	Displays errors in the NFAS word
HDB3 CV	Records the number of HDB3 code violations encountered.

Table 1 details some of the available statistics that can be viewed in real time on the aurora^{Duet} when connected to the link.

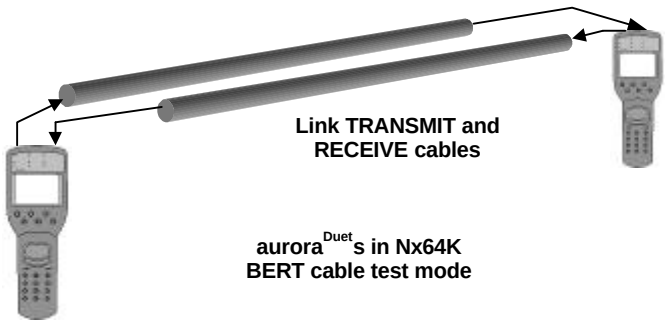
Error counts registered against CRC4, FAS / NFAS, E or HDB3 CV may indicate signal degradation problems such as low signal levels, excessive EMI or impedance mismatches causing excessive reflections.

Recorded timeslot slippage under the SLIP count indicate master clock synchronisation problems in the local exchange or international interface. This SLIP problem is particularly common on inter-continental links.

2. Testing the 2Mbit/S cable quality – *Layer 1 testing on the aurora^{Duet}*

When installing coaxial or twisted pair cabling for 2Mbit/S links or when all else fails in resolving problems on an existing link, the cable 'digital quality' will need to be determined. This can be achieved by terminating each end of the link (receive and transmit paths) with an aurora^{Duet} running a wide-band bit-error-rate-test (BERT) across the link.

Figure 1. Test Configuration for cable test.



The aurora^{Duet} will allow the cable to be divided into 32 timeslots with framing over timeslot 0. The remaining timeslots may then have a 64kbit/S BERT attached to provide an n x 64kbit/S BERT of approximately 2Mbit/S.

Using this function the quality of the cabling may be quickly understood and hence its suitability for carrying 2Mbit/S signalling conforming to G.703. This test allows quick set-up using hotkeys and a graphical timeslot map of the link along with the ability to send results via the serial communications port for printing or storage.

The functionality detailed above is available in the latest release of aurora^{Duet} software. Please contact your Local Vendor or the Trend Communications Ltd Customer Support Hotline (tel: +44 1628 851085) for further information.

You may also visit our WEB SITE at: http://www.trendcomms.com